```
                                              1        6                 25
HSP 65 - M.T.    ---------- ---------- -----MAKTI AYDEEARRGL ERGLNALADA
HSP 60 - RAT     MLRLPTVLRQ MRPVSRALAP HLTRAYAKDV KFGADARALM LQGVDLLADA
HSP 60 - HUMAN   MLRLPTVFRQ MRPVSRVLAP HLTRAYAKDV KFGADARALM LQGVDLLADA

Consensus        ---------- ---------- ------AK-- -----AR--- --G---LADA

                 26                                                  75
HSP 65 - M.T.    VKVTLGPKGR NVVLEKKWGA PTITNDGVSI AKEIELEDPY EKIGAELVKE
HSP 60 - RAT     VAVTMGPKGR TVIIEQSWGS PKVTKDGVTV AKSIDLKDKY KNIGAKLVQD
HSP 60 - HUMAN   VAVTMGPKGR TVIIEQSWGS PKVTKDGVTV AKSIDLKDKY KNIGAKLVQD

Consensus        V-VT-GPKGR -V--E--WG- P--T-DGV-- AK-I-L-D-Y --IGA-LV--

                              6-7(31-52 AA)

                 76                                                  125
HSP 65 - M.T.    VAKKTDDVAG DGTTTATVLA QALVREGLRN VAAGANPLGL KRGIEKAVEK
HSP 60 - RAT     VANNTNEEAG DGTTTATVLA RSIAKEGFEK ISKGANPVEI RRGVMLAVDA
HSP 60 - HUMAN   VANNTNEEAG DGTTTATVLA RSIAKEGFEK ISKGANPVEI RRGVMLAVDA

Consensus        VA--T---AG DGTTTATVLA -----EG--- ---GANP--- -RG---AV--

                                                            21 (121-136 AA)

                 126                                                 174
HSP 65 - M.T.    VTETLLKGAK EVETKEQIAA TAAISA.GDQ SIGDLIAEAM DKVGNEGVIT
HSP 60 - RAT     VIAELKKQSK PVTTPEEIAQ VATISANGDK DIGNIISDAM KKVGRKGVIT
HSP 60 - HUMAN   VIAELKKQSK PVTTPEEIAQ VATISANGDK EIGNIISDAM KKVGRKGVIT

Consensus        V---L-K--K -V-T-E-IA- -A-ISA-GD- -IG--I--AM -KVG--GVIT

                 175                                                 224
HSP 65 - M.T.    VEESNTFGLQ LELTEGMRFD KGYISGYFVT DPERQEAVLE DPYILLVSSK
HSP 60 - RAT     VKDGKTLNDE LEIIEGMKFD RGYISPYFIN TSKGQKCEFQ DAYVLLSEKK
HSP 60 - HUMAN   VKDGKTLNDE LEIIEGMKFD RGYISPYFIN TSKGQKCEFQ DAYVLLSEKK

Consensus        V----T---- LE--EGM-FD -GYIS-YF-- ----Q----- D-Y-LL---K

                       31 (181-196 AA)                    36 (211-226 AA)

                 225                                                 274
HSP 65 - M.T.    VSTVKDLLPL LEKVIGAGKP LLIIAEDVEG EALSTLVVNK IRGTFKSVAV
HSP 60 - RAT     ISSVQSIVPA LEIANAHRKP LVIIAEDVDG EALSTLVLNR LKVGLQVVAV
HSP 60 - HUMAN   ISSIQSIVPA LEIANAHRKP LVIIAEDVDG EALSTLVLNR LKVGLQVVAV

Consensus        -S------P- LE------KP L-IIAEDV-G EALSTLV-N- -------VAV

                       40 (236-251 AA)                  45 (265-280 AA)
```

Fig. 1

```
                    275                                                 323
HSP 65 - M.T.       KAPGFGDRRK AMLQDMAILT GGQVISEE.V GLTLENADLS LLGKARKVVV
HSP 60 - RAT        KAPGFGDNRK NQLKDMAIAT GGAVFGEEGL NLNLEDVQAH DLGKVGEVIV
HSP 60 - HUMAN      KAPGFGDNRK NQLKDMAIAT GGAVFGEEGL TLNLEDVQPH DLGKVGEVIV

Consensus           KAPGFGD-RK --L-DMAI-T GG-V--EE-- -L-LE----- -LGK---V-V


                    324                                                 373
HSP 65 - M.T.       TKDETTIVEG AGDTDAIAGR VAQIRQEIEN SDSDYDREKL QERLAKLAGG
HSP 60 - RAT        TKDDAMLLKG KGDKAHIEKR IQEITEQLDI TTSEYEKEKL NERLAKLSDG
HSP 60 - HUMAN      TKDDAMLLKG KGDKAQIEKR IQEIIEQLDV TTSEYEKEKL NERLAKLSDG

Consensus           TKD------G -GD---I--R ---I------ --S-Y--EKL -ERLAKL--G

                                                  59 (349-364 AA)

                    374                                                 423
HSP 65 - M.T.       VAVIKAGAAT EVELKERKHR IEDAVRNAKA AVEEGIVAGG GVTLLQAAPT
HSP 60 - RAT        VAVLKVGGTS DVEVNEKKDR VTDALNATRA AVEEGIVLGG GCALLRCIPA
HSP 60 - HUMAN      VAVLKVGGTS DVEVNEKKDR VTDALNATRA AVEEGIVLGG GCALLRCIPA

Consensus           VAV-K-G--- -VE--E-K-R --DA-----A AVEEGIV-GG G--LL---P-

                          63 (373-388 AA)

                    424                                                 472
HSP 65 - M.T.       LDELK.LEGD EATGANIVKV ALEAPLKQIA FNSGLEPGVV AEKVRNLPAG
HSP 60 - RAT        LDSLKPANED QKIGIEIIKR ALKIPAMTIA KNAGVEGSLI VEKILQSSSE
HSP 60 - HUMAN      LDSLTPANED QKIGIEIIKR TLKIPAMTIA KNAGVEGSLI VEKIMQSSSE

Consensus           LD-L-----D ---G--I-K- -L--P---IA -N-G-E---- -EK-------


                    473                                                 522
HSP 65 - M.T.       HGLNAQTGVY EDLLAAGVAD PVKVTRSALQ NAASIAGLFL TTEAVVADKP
HSP 60 - RAT        VGYDAMLGDF VNMVEKGIID PTKVVRTALL DAAGVAPLLT TAEAVVTEIP
HSP 60 - HUMAN      VGYDAMAGDF VNMVEKGIID PTKVVRTALL DAAGVASLLT TAEVVVTEIP

Consensus           -G--A--G-- ------G--D P-KV-R-AL- -AA--A-L-- T-E-VV---P

                                                  84 (499-514 AA)

                    523             540
HSP 65 - M.T.       EKEKASVPGG GDMGGMDF-- -----
HSP 60 - RAT        KEEKD..PGM GAMGGMGGGM GGGMF
HSP 60 - HUMAN      KEEKD..PGM GAMGGMGGGM GGGMF

Consensus           --EK---PG- G-MGGM---- -----
```

Fig. 1(continued)

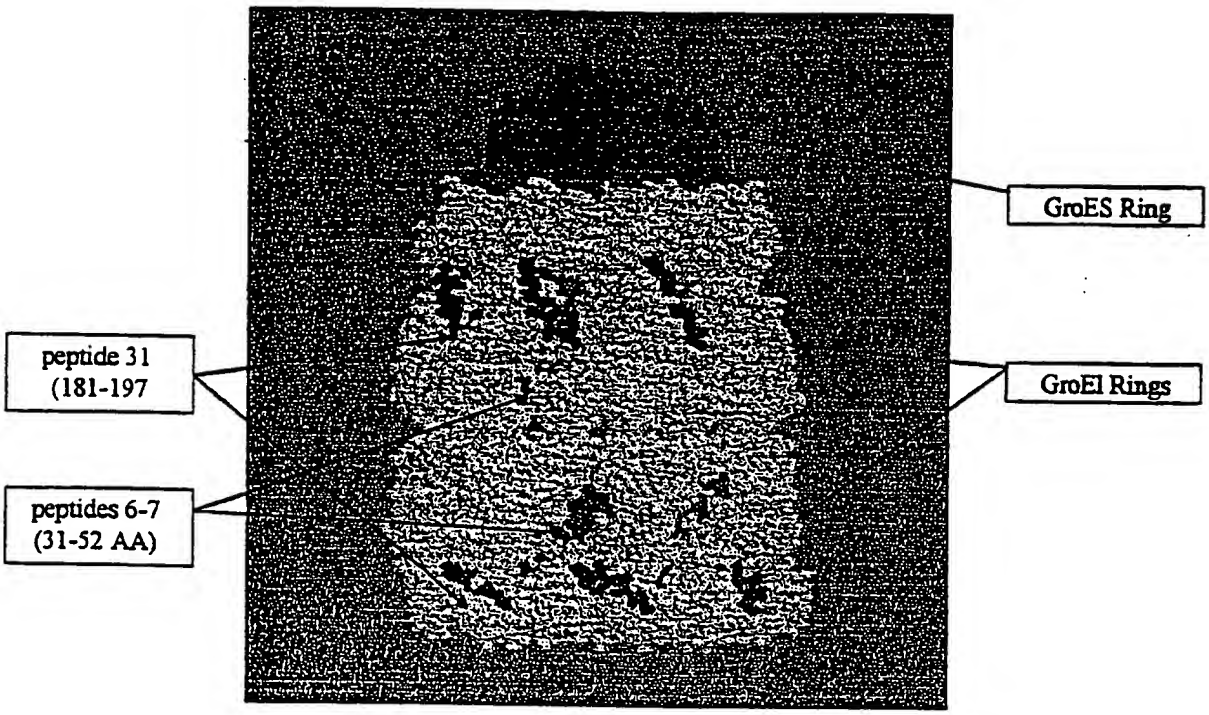
GroES Ring
peptide 31
(181-197
GroEl Rings
peptides 6-7
(31-52 AA)

Fig. 2

Fig. 3A

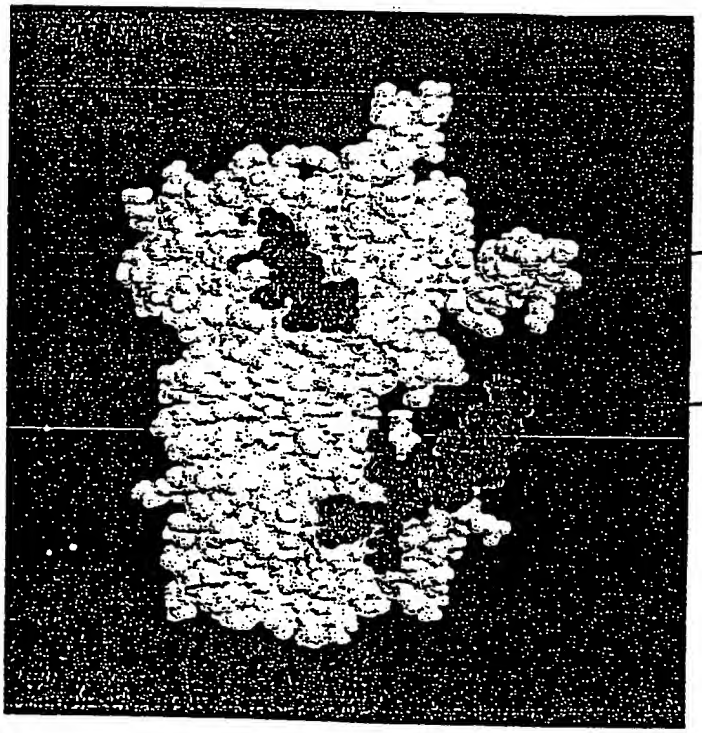

Fig. 3B

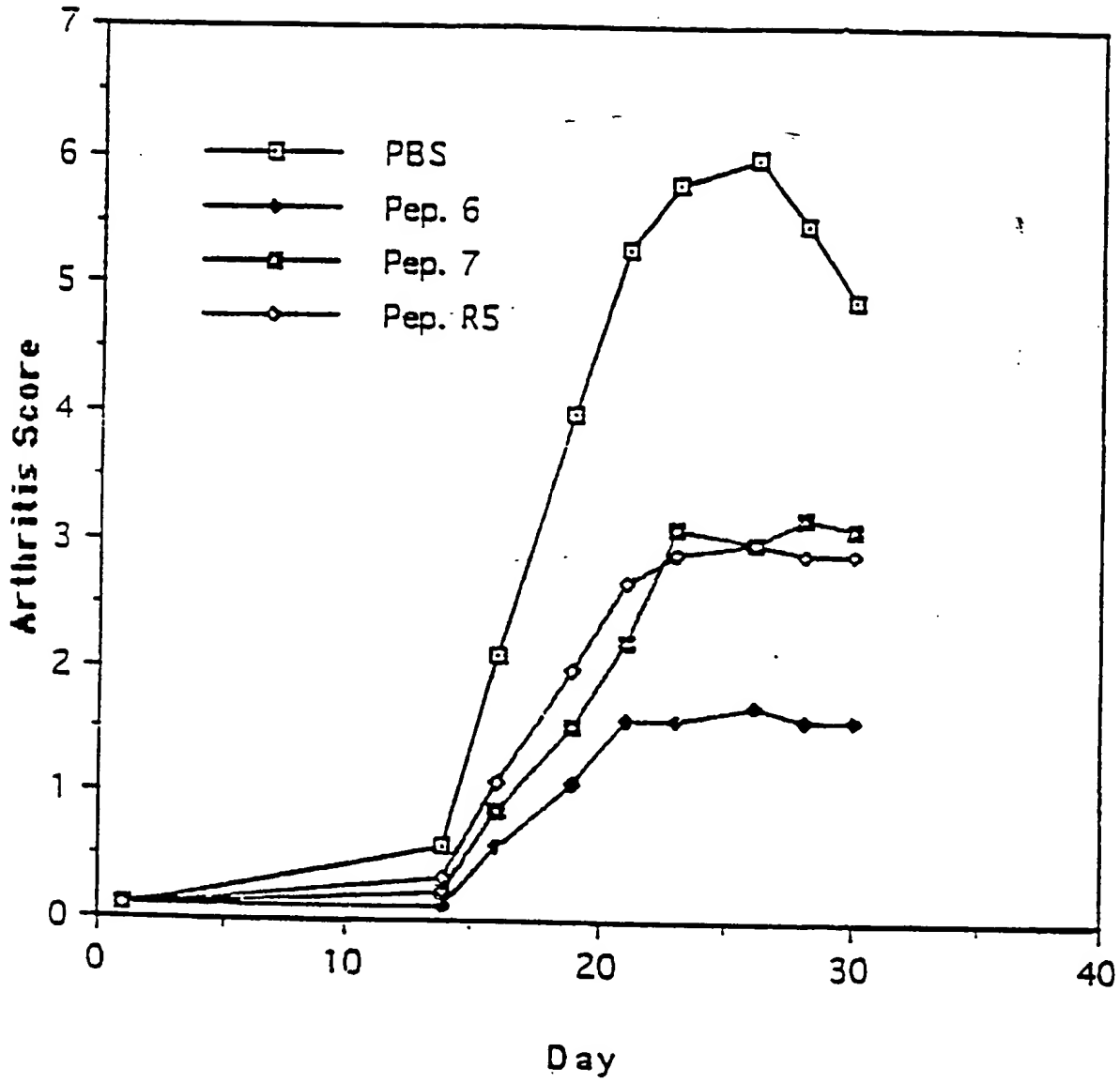
PBS
Pep. 6
Pep. 7
Pep. R5
Arthritis Score
Day
0
1
2
3
4
5
6
7
0
10
20
30
40

Fig. 4

The "Protective" Motif

MT	HSP Peptide 6- (31-46)	G P K G R N V V L E K K W G A P
MT	HSP Peptide 7- (37-52)	V V L E K K W G A P T I T N D G
Rat	HSP Peptide 5- (36-55)	T V I I E Q S W G S P K V T K D G V T V
Common Motif		V = = E - - W G - P

Fig. 5

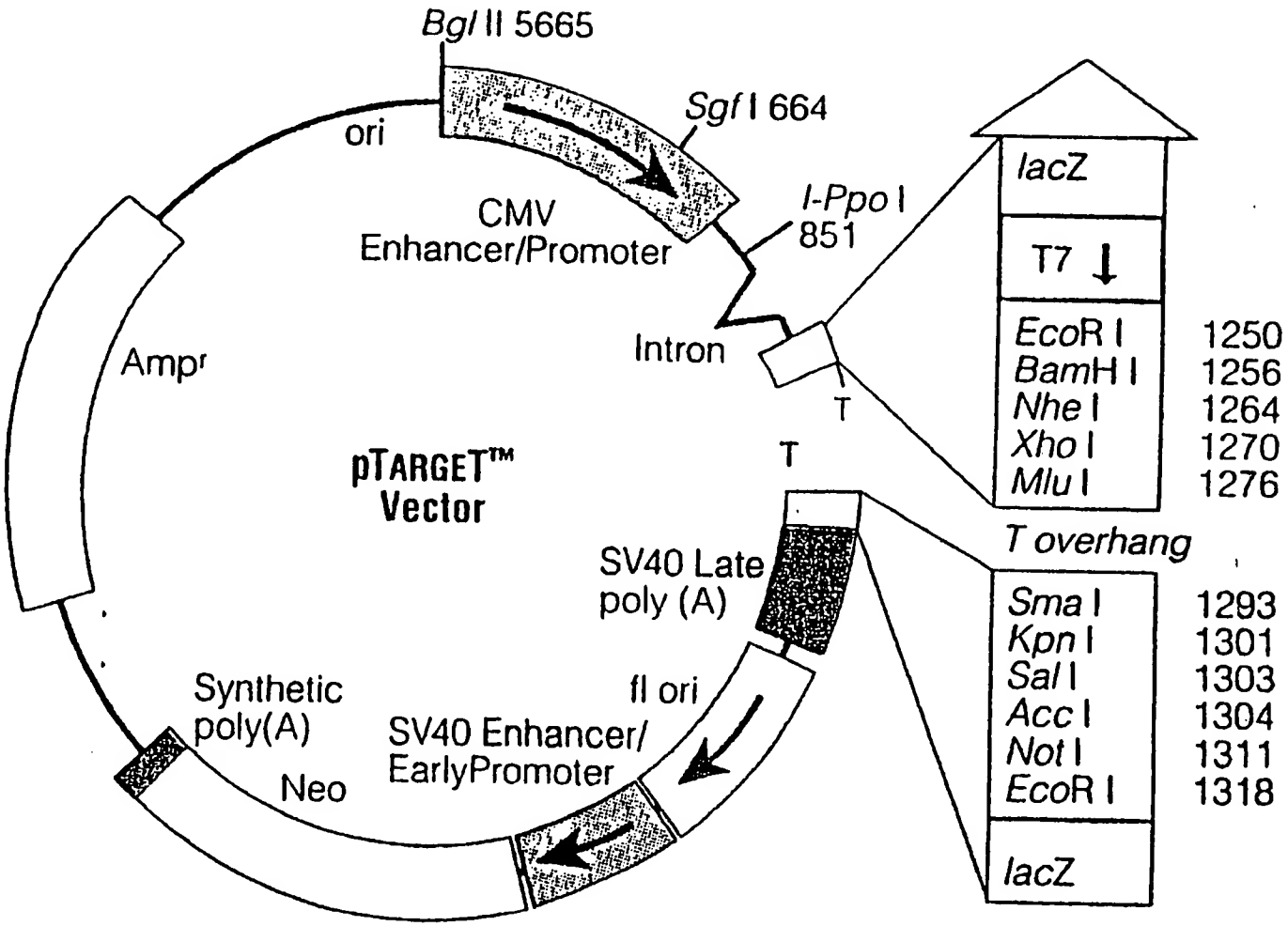
Bgl II 5665
Sgf I 664
I-Ppo I
851
ori
CMV
Enhancer/Promoter
Intron
Ampr
pTARGET™
Vector
T
T
SV40 Late
poly (A)
fl ori
SV40 Enhancer/
EarlyPromoter
Synthetic
poly(A)
Neo
lacZ
T7
EcoR I 1250
BamH I 1256
Nhe I 1264
Xho I 1270
Mlu I 1276
T overhang
Sma I 1293
Kpn I 1301
Sal I 1303
Acc I 1304
Not I 1311
EcoR I 1318
lacZ

Fig. 6